

REMARKS

Claims 1-3 and 5 are pending in the present application. Claims 1-3 and 5 stand rejected. Applicants have added new claim 8. Claim 8 is supported by Examples 1-30, page 7, line 11 through page 8, line 17 and formula (1) in claim 2 of the present application.

Rejection under 35 U.S.C. §103 (a)

Claims 1-3 and 5 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent 6,283,903 to Onuki, et al. According to the Examiner, Onuki '903 teaches conductive rubber compositions and that the compositions incorporate the presently claimed rubber. For support, the Examiner states that Onuki '903 describes a process "... wherein the unvulcanized rubber is mixed with an ionic liquid and subsequently cured." Applicants respectfully disagree.

Onuki '903 does not describe nor suggest the presently claimed moderately resistive rubber member and specifically, does not describe or suggest an ionic liquid, as suggested by the Examiner. More precisely, the ionic species at column 9 lines 20-25 of Onuki '903 does not suggest the claimed ionic liquid species of the present invention.

Onuki '903 teaches the ionic species at column 9 lines 20-25 as "...charge transfer substances such as epichlorohydrin rubber, tetracyano ethylene and its derivative, benzoquinone and its derivative, ferrocene and its derivative, dichloro dicyano benzoquinone and its derivative and phthalocyanine and its derivative; inorganic ionic substances such as lithium perchlorate, sodium perchlorate and calcium perchlorate; cationic surfactants; and amphoteric surfactants." These species are not ionic liquids nor do they suggest an ionic liquid. For example, consider lithium perchlorate which is described in Onuki '903. An ion-conducting-type rubber member that contains lithium perchlorate is problematic in that its resistance varies in accordance with change in temperature, humidity and voltage applied to the rubber member. Importantly, applicants describe these findings at page 2, line 2 through page 3, line 4 of the present specification (See also comparative example 28). As applicants point out,

in addition to the problems associated with lithium perchlorate (varying resistance in response to change in temperature, humidity and voltage applied) handling an ion-conducting material such as lithium perchlorate involves unnecessary risk. Contrary to Onuki '903, the present invention specifically avoids such materials. Furthermore, the unexpected results exhibited with the moderately resistive rubber member of the present invention further illustrate an important benefit of the present invention including.

Importantly, the present invention teaches a moderately resistive rubber member that contains an ionic liquid. Onuki '093 simply does not teach, disclose or suggest such a species. Furthermore, the rubber member of the present invention readily attains a predetermined resistance and undergoes no change in physical properties. In addition, the rubber member is not affected by changes in humidity, and is minimally affected by change in environmental conditions and voltage. (See for example page 29 and the Examples of the present invention.

Thus, contrary to the Examiner's suggestion, each element of the claimed invention is not present in Onuki '903 nor does Onuki '903 teach, disclose or suggest the combination of the present invention. Therefore, the present invention should be considered novel and unobvious over the prior art cited throughout prosecution and the last remaining rejection over Onuki '903 should be withdrawn.

Finally, the moderately resistive rubber member of new claim 8 requires an ionic liquid that contains a cationic species, which are used in the Examples of the present application. For the same reasons discussed above, the new claim should also be considered novel

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Conclusion

Based on the Amendments and Remarks above, Applicant respectfully requests allowance of claims 1-3, 5 and 8.

Respectfully submitted,
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